EDITORIAL

Anesthesiologists Recovering From Chemical Dependency: Can They Safely Return to the Operating Room?

In the current issue of *Mayo Clinic Proceedings,* Berge et al[1] review the challenges associated with identifying and treating chemically dependent physicians. The authors inform readers that the nature of this dependency can vary, in part, by medical specialties and practice locations and that the risk of death from dependency is associated with the drugs used in clinical practice. We explore these issues in some detail, as well as the health and professional outcomes of chemically dependent anesthesiologists who have completed a treatment program. In our final analysis, we intend to provide a literature-based assessment of whether once-addicted anesthesiologists should, under any circumstances, be allowed to return to operating room–based anesthesia practice.

Relative to all other specialties, anesthesiologists are overrepresented in chemical dependency treatment populations and in monitoring programs. Although they account for 5% of all physicians, anesthesiologists constitute 13% to 15% of populations receiving treatment for chemical dependency in centers specializing in the treatment of physicians and in programs that monitor such physicians after treatment.[2-4]

Several explanations have been posited for this increased incidence of substance dependence among anesthesiologists. Certainly, the exposure and access to high-potency opioids inherent to the practice of anesthesiology may be an exacerbating factor. Several authors think that exposure to drugs of abuse in the workplace leads to higher abuse of those workplace drugs.[5-7] This postulate is supported by data on major opioid use by anesthesiologists (morphine, meperidine, fentanyl, and other injectable narcotics) and minor opioid use by family physicians (hydrocodone, oxycodone, codeine, and other oral drugs).[5-7] In contrast with physicians in other specialties who primarily administer medications by proxy and therefore do not touch drugs or have them in their possession, anesthesiologists directly administer fentanyl, sufentanil, alfentanil, and remifentanil on a daily basis; although protocols to prevent diversion are typically in place at every hospital and outpatient surgical center, they are not fail-safe.[8] If use of major opioids results in a more aggressive manifestation and progression of addiction, that would partly account for the overrepresentation of anesthesiologists in physician treatment and monitoring programs.[2-4]

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Gold et al[9] and McAuliffe et al[10] have recently hypothesized that anesthesiologists may become sensitized to occupationally acquired opioids through the inhalation of picograms of these potent agents in the operating room air. Assays of operating room air, especially when taken near the lung-gas exhalation point in the anesthetized patient, detected these agents.[9-11] However, this hypothesis assumes that sensitization directly contributes to the etiology of addiction and that the quantities are sufficient to produce sensitization. Although this hypothesis would certainly, in part, explain the predilection of anesthesiologists toward substance abuse and dependence and raise important concerns about occupational health, it remains unproven.

See also page 625

Major opioids such as fentanyl produce a rapid downhill course because of the development of a remarkable level of habituation when they are injected.[12] In addition, Collins[12] suggests that the rapid onset, the resolution of habituation with brief periods of abstinence, and the low therapeutic ratio contribute to the high mortality rate in fentanyl-, sufentanil-, alfentanil-, and remifentanil-abusing anesthesiologists.

Some medical students may be applying to anesthesiology residency programs because of pharmacological admiration and knowledge of abusable substances and prior "effective" exposure to them.[2,13] In other words, the increased representation of anesthesiologists in treatment centers can be attributed in part to a selection bias; namely, medical students who have a predisposition to abuse drugs are more likely to apply to anesthesiology residency programs. Lutsky et al[14] found that 16% of anesthesiology residents or fellows reported problematic substance abuse during their training, 85% thought education on substance abuse was inadequate, 70% rated drug control systems as fair to poor, and 19% observed attending physicians and 53% observed other residents abusing alcohol or drugs.

If anesthesiologists are more likely to develop dependency to high-potency opioids (which, in turn, are more likely to cause overdose and death than lesser opioids), should once-dependent anesthesiologists who have received treatment ever be allowed to return to the operating room, where these drugs are available for diversion and where anesthesiologists may be inadvertently inhaling these very substances? Multiple conflicting studies have debated the outcome of anesthesiologists who have returned to the operating room after some form of treatment for chemical dependency.

In 1990, Menk et al[15] reported a successful reentry rate of only 34% for anesthesiology residents who abused parenteral opioids vs 70% for nonopioid abusers. They also reported 13 deaths (16%) in a subgroup that abused parenteral opioids and were allowed to return to the residency. Death was the first sign of relapse among these 13 residents. This 1990 study has been heavily quoted because it was one of the first that promulgated a pessimistic view of anesthesiologists returning to work. However, it also has been criticized because it was essentially an opinion survey of anesthesia training directors. Of the 159 anesthesia training program directors surveyed, 113 responded, providing 180 case reports, with most programs providing only a single case report of a resident having been addicted. If most programs reported only a single case, it is likely that such reports were biased toward negative outcomes.

Booth et al[16] surveyed academic anesthesia chairs and program directors and reported that addictive disorders were detected in 1% of faculty members and 1.6% of residents during the survey years. Of these, 18% were detected by death or near death from overdose. These findings are even more alarming when set in the context of the increased education of anesthesiologists and residents and the heightened vigilance regarding access to controlled substances that have become the norm since the publication of the study by Menk et al.[15]

Collins et al[17] surveyed anesthesiology residents in 2005. Of 199 substance-abusing residents, 50% were eventually able to return to their anesthesia residency after treatment, and 91% of those residents completed training. However, the remaining 9% died of relapse-related events.[17]

Wischmeyer et al[18] conducted a survey of academic anesthesia department chairs, similar to those conducted regarding opioid abuse by Menk et al[15] and Collins et al[17]; however, they also asked about abuse of propofol, a sedative and anesthesia-induction agent, by attending physicians, resident physicians, and nurse anesthetists. This study found that, between 1995 and 2005, 18% of departments had personnel who abused propofol; that percentage represented a 5-fold increase over the rate reported 10 years earlier. (Of note, the time course of this research coincided with a period in which use of propofol in the operating room increased dramatically.) Furthermore, 28% of the cases of propofol abuse were detected by death due to overdose. Lack of systematic control of propofol, as is done with opioids in most institutions, was thought to contribute to the increased incidence of propofol abuse.[18] As such, experience with propofol lends credibility to the concept that frequent hands-on contact with highly potent sedatives, hypnotic agents, and opioids places anesthesiologists at risk of abuse of the very drugs on which they base their professional livelihood.

Although this topic had already received considerable attention in the literature, it was the recent review by Bryson and Silverstein[19] and the subsequent editorial by Berge et al[20] that reignited the controversy surrounding anesthesiologists returning to the operating room after treatment for chemical dependency.

Bryson and Silverstein[19] methodically evaluated the indexed literature from 1993 to 2008 as it related to addiction and substance abuse in the anesthesia workplace. Their review included any new data on prevalence, ideology, genetic and biochemical theories, psychiatric comorbidity, occupational exposure, behavioral manifestations, legal issues, diagnosis and treatment, prognosis, prevention, and testing methodologies. They concluded that addiction remains an occupational hazard for anesthesiologists because of the highly addictive agents that are readily available in the operating room and that it was essential to learn to recognize the signs and symptoms of addiction. They further concluded that successful completion of a treatment program was no guarantee against relapse and that careful thought needed to be given to what constituted a sufficient reason to allow an addictive physician to return to the practice of anesthesiology.[19]

Berge et al[20] took this one step further in their editorial comment on the article by Bryson and Silverstein.[19] They concluded that, despite 15 years of additional information and multiple programmatic efforts, there had been "little, if any, positive impact on the specialty wide incidence of substance abuse and addiction…and that deaths from opioid abuse continue." They acknowledged that having recognized diversion of narcotics as a major issue in their own anesthesiology department of 475 practitioners, and having instituted programs to lessen the problem, the incidence of diversion had fallen from 1 case per year to only 1 total in the past 7 years. However, it was primarily their subjective report of "nearly 100% relapse" of 12 nurse anesthetists over the course of 20 years that seemed to support their ultimate recommendation of a default position of "one strike, you're out" in lieu of routine return to the operating room.

That particular position seems to have generated a prolific response. Six letters to the editor[21-26] were published in the June issue of *Anesthesiology,* followed by the reply of Berge et al.[27]

Cohen[21] shared the experience of the Physician Health Committee of the Medical Society of the District of Columbia in monitoring anesthesiologists who have returned to the operating room. Although the actual number of anesthesiologists doing so is not cited, the nature of the monitoring is well described. Cohen concluded that individual consideration, long-term close surveillance, and aftercare by a specialist in addiction medicine may provide an alternative to the default position of "one strike, you're out."

Skipper and DuPont[22] described 3 articles that were absent from the review by Bryson and Silverstein and the subsequent editorial by Berge et al. These include the reports by Pelton and Ikeda,[4] Paris and Canavan,[3] and Domino et al,[28] all of which support individualized return to the operating room. Skipper, DuPont, and colleagues further described the outcomes of 904 physicians from 16 physician health programs (PHPs) followed up for 5 or more years.[29] All these data were thought by these authors to support the return of anesthesiologists to the operating room on a case-by-case basis. They advocated early detection, such as workplace drug testing, followed by immediate referral to the appropriate PHP for proper management and monitoring.

Earley and Berry[23] raised the critical question: Can the treated addict who will relapse be distinguished from the one who can, under the right circumstances, be integrated back into the practice of anesthesiology without adverse consequences? They raised the concern that none of the published studies describing the outcomes of addicted anesthesiologists contained specifics regarding the treatment, follow-up care, or factors used to determine whether to recommend return to anesthesia or redirection. They cited the report by Angres et al,[30] which listed the specific factors used to decide whether addicted anesthesiologists were candidates to return to the specialty immediately after treatment. Earley and Berry recommended research that triangulates patient characteristics, type of treatment, and patient outcomes. They further recommended research evaluating the various assessment and management protocols that have already been put in place to decrease the likelihood and lethality of relapse.

Katz[24] was also critical of the recommendations by Berge et al because the data used to develop their conclusion did not distinguish among different drugs, take into account differences between residents and attending physicians, consider the effect of not practicing on relapse rates, or determine the actual effect on relapse and death rates when recovering anesthesiologists are redirected to other specialties.[24]

Torri[25] wrote in support of the "one strike, you're out" default position because "the time between relapsing addiction and diagnosis typically extends into many months" and "in this rather long time period the anesthesia care provider will be treating a few hundred patients while either under the influence of self administered opioids or during a withdrawal syndrome."

Finally, Specht[26] raised the critical point that the "one strike, you're out" default position will discourage individuals who might otherwise seek help from doing so because of the concern that this action will end their career. This reluctance to seek help will isolate these anesthesiologists and allow progression of their disease until they harm a patient or harm themselves.

In response to the 6 letters to the editor,[21-26] Berge et al[27] made several excellent points. First, they conceded that a second chance at anesthesia employment is not inappropriate when reentry criteria are used that portend a good chance of success for return to the workplace and when the reentry is within the framework of a well-functioning PHP. Second, they questioned whether a traditional 3- to 5-year monitoring period is adequate for a chronic disease and suggested that lifelong monitoring would be more appropriate. Finally, they strongly encouraged future research that incorporates valid study design, outcome metrics, and appropriate data analyses.

In response to the letters to the editor and reply published in *Anesthesiology*, we recently reviewed all the indexed literature regarding whether an anesthesiologist can return to the operating room after treatment for chemical dependency. This editorial briefly summarizes for the first time the findings of our literature review. The first stage of our review has already been described. After that exercise, we arrived at the same conclusion as Berge et al. Despite our earlier opinions to the contrary, our review of the literature led us to the impression that a recovering anesthesiologist should probably never be allowed to return to the operating room.

However, our review of the literature did not define the role of monitoring programs, type or duration of treatment, role of hair and nail testing to confirm recent opioid use, or the effect of the use of depot naltrexone. When we reviewed the experience of the subset of PHPs that incorporated trimodal monitoring (chemical, behavioral, and workplace), aggressively tested hair and fingernails for high-potency opioids, required administration of depot naltrexone, and followed up anesthesiologists for 5 years after residential treatment that averaged 3 months, the results were strikingly different from other attempts at rehabilitation.

Paris and Canavan[3] from the New Jersey PHP compared 32 anesthesiologists with 36 physician controls for an average of 7.5 years and showed no difference in the relapse rates between these 2 groups. When stratified by residents vs attending physicians, no significant difference was found. Domino et al[28] examined the risk of relapse during an 11-year period of 256 participants in the Washington state PHP, including 32 anesthesiologists. The relapse rate for anesthesiologists was not significantly different than that for other physicians. Domino et al further noted that fentanyl users had a slightly lower incidence of relapse than other major opioid users. Anesthesiologists who returned to the practice of anesthesiology had an increased risk of relapse vs those who did not return, although the authors cautioned that their numbers were small and the signifi-

cance of their findings was uncertain. Users of major opioids had a higher risk of relapse, as did physicians with an existing comorbid psychiatric disorder or a family history of addiction. Domino et al concluded that anesthesiologists who use major opioids and have no other risk factors (family history, comorbid psychiatric disorder, or history of relapse) are good candidates to return to the practice of anesthesiology. No episode of patient harm or death from overdose by any anesthesiologist was reported in this study. A similar report from Pelton and Ikeda[4] involving 255 physicians who had participated in the California Diversion Program during a 10-year period showed no difference in relapse rates for anesthesiologists.

More recent results from a collaborative study of 16 PHPs yielded markedly similar results. McLellan et al[29] reported outcomes for 904 physicians from 16 PHPs followed up for 5 or more years. Of this group, 102 were anesthesiologists who were found to have undergone more intensive monitoring and to have slightly better outcomes than did physicians in other specialties. Skipper found that this group of anesthesiologists was less likely to have a positive drug test(s) during monitoring, had similar rates of being reported to a medical board for nonadherence or relapse, and did no harm to patients as a result of relapse (Greg Skipper, MD, unpublished data, 2009). One nationally recognized PHP has evaluated or treated 128 addicted anesthesiologists during the past 9 years (Paul Earley, MD, unpublished data, 2008). Many of the anesthesiologists returned to clinical practice in the operating room. However, the decision was made on a case-by-case basis with a carefully staged reentry process that included further assessment and management protocols to decrease the likelihood of relapse.

The studies that followed up anesthesiologists under close monitoring in PHPs[3,4,28,29] describe outcomes of anesthesiologists that are similar to those of other physicians; however, studies that were based on a survey that relied on the memories of anesthesiology program directors or department heads and in which treatment and monitoring of physician patients were not reported describe poor, and at times, fatal outcomes.[15-17]

No study has correlated relapse rate with type or length of treatment or with the use of maintenance depot naltrexone. There has been no prospective study in which all other variables were controlled and participants were randomized as to whether they could return to the operating room (it is unlikely that an institutional review board would approve such a proposal).

Fitzsimons et al[31] instituted a program of random urine testing of residents in anesthesiology in an attempt at primary prevention and at lowering the incidence of substance abuse. Although these authors show that such a program is feasible despite logistic and cultural obstacles and concerns about the privacy of study participants, they acknowledge that larger multi-institutional studies will be required to determine whether instituting a program of random urine testing decreases the incidence of substance abuse in anesthesiology residents.

Despite the occasional dramatic report of patient harm by an impaired anesthesiologist, overall chemical dependency has rarely been the cause of such incidents. Domino et al[28] found no evidence of patient harm during an 11-year follow-up. Sivarajan et al[32] examined data from the American Society of Anesthesiology malpractice database, seeking evidence of patient harm from substance abuse. Of the 2715 closed anesthesia claims, only 7 had a notation of substance abuse in the claim summary. Two of the 7 cases involved substance-abusing nurse anesthetists inadequately supervised by anesthesiologists. Of the remaining 5 claims, 3 involved serious patient harm (brain damage or death) resulting from lack of vigilance or judgment during anesthesia. Of these 3 incidents of serious patient harm, 2 involved anesthesiologists who were alcoholics and the third involved an anesthesiologist who left the care of the patient to smoke a cigarette. The 2 alcoholic anesthesiologists had been unavailable to provide care, one because of alcohol intoxication and the other because he/she had left to attend rehabilitation without providing backup care for a patient with chronic pain. In summary, of 2715 malpractice claims against anesthesiologists, 5 involved substance-abusing anesthesiologists, 4 of whom were alcoholics and 1 of whom was a smoker. None involved anesthesiologists addicted to drugs obtained from the workplace.

In aggregate, our review of the literature has led us to agree with the following statement made by Berge et al[27] in their recent reply to the 6 letters to the editor published in *Anesthesiology*: "Although not all 50 states have…well-functioning PHPs…the exemplary programs nevertheless represent an ideal worth striving for. Successful PHPs should be celebrated, replicated, and *required* for addicted [anesthesia care providers] who seek to return to healthcare employment." Unfortunately, the results of care programs using other models with less diligent follow-up are not as promising and are less likely to lead to the rehabilitation and successful return to the workplace of once-addicted medical practitioners.

Anesthesiologists treated and monitored for substance disorders under supervision of well-functioning PHPs with stringent criteria for reentry to the workplace had equally good outcomes as other physicians with no higher mortality rate, relapse rate, or disciplinary rate and no evidence of patient harm. Study design likely accounts for contradictory reports seen in earlier studies, in which the physician-

patients were not being monitored by PHPs. Until studies incorporate severity of addiction, type and duration of treatment, sophistication of drug testing, provisions of monitoring and follow-up, and primary prevention by occupational testing, a more reasonable alternative to the "one strike, you're out" policy would be a requirement that a substance-abusing anesthesiologist being cleared to return to operating room practice participate in a PHP-mandated monitoring and aftercare program that conforms to the highest standards shown by the literature to provide optimal outcomes. The first step of such an approach would be to acknowledge and seek to remedy the lack of uniformity among the various states' PHP monitoring standards (or, in the case of several states, the absence of a PHP). Available data suggest that any lesser approach simply cannot promise the desired high rate of successful rehabilitation and places the substance-abusing anesthesiologist at an unacceptably high risk of relapse.

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1. Berge KH, Seppala MD, Schipper AM. Chemical dependency in the physician. *Mayo Clin Proc*. 2009;84(7):625-631.

2. Talbott GD, Gallegos KV, Wilson PO, Porter TL. The Medical Association of Georgia's impaired physicians' program: review of the first 1000 physicians—analysis of specialty. *JAMA*. 1987;257(21):2927-2930.

3. Paris RT, Canavan DI. Physician substance abuse impairment: anesthesiologists vs. other specialties. *J Addict Dis*. 1999;18(1):1-7.

4. Pelton C, Ikeda RM. The California Physicians Diversion Program's experience with recovering anesthesiologists. *J Psychoactive Drugs*. 1991; 23(4):427-431.

5. Hughes PH, Storr CL, Brandenburg NA, Baldwin DC Jr, Anthony JC, Sheehan DV. Physician substance use by medical specialty. *J Addict Dis*. 1999; 18(2):23-37.

6. Hughes PH, Brandenburg N, Baldwin DC Jr, et al. Prevalence of substance abuse among US physicians [published correction appears in *JAMA*. 1992;268(18):2518]. *JAMA*. 1992;267(17):2333-2339.

7. Lutsky I, Hopwood M, Abram SE, Cerletty JM, Hoffman RG, Kampine JP. Use of psychoactive substances in three medical specialties: anesthesia, medicine and surgery. *Can J Anaesth*. 1994;41(7):561-567.

8. Klein RL, Stevens WC, Kingston HG. Controlled substance dispensing and accountability in United States anesthesiology residency programs. *Anesthesiology*. 1992;77(4):806-811.

9. Gold MS, Melker RJ, Dennis DM, et al. Fentanyl abuse and dependence: further evidence for second hand exposure hypothesis. *J Addict Dis*. 2006; 25(1):15-21.

10. McAuliffe PF, Gold MS, Bajpai L, et al. Second-hand exposure to aerosolized intravenous anesthetics propofol and fentanyl may cause sensitization and subsequent opiate addiction among anesthesiologists and surgeons. *Med Hypotheses*. 2006;66(5):874-882. Epub 2006 Jan 23.

11. Merlo LJ, Goldberg BA, Kolodner D, Fitzgeral K, Gold MS. Fentanyl and propofol exposure in the operating room: sensitization hypotheses and further data. *J Addict Dis*. 2008;27(3):67-76.

12. Collins GB. Drug and alcohol use and addiction among physicians. In: Miller NS, ed. *Comprehensive Handbook of Drug and Alcohol Addiction*. New York, NY: Marcel Dekker; 1991:947-966.

13. Gallegos KV, Browne CH, Veit FW, Talbott GD. Addiction in anesthesiologists: drug access and patterns of substance abuse. *QRB Qual Rev Bull*. 1988;14(4):116-122.

14. Lutsky I, Abram SE, Jacobson GR, Hopwood M, Kampine JP. Substance abuse by anesthesiology residents. *Acad Med*. 1991;66(3):164-166.

15. Menk EJ, Baumgarten RK, Kinsley CP, Culling RD, Middaugh R. Success of reentry into anesthesiology training programs by residents with a history of substance abuse. *JAMA*. 1990;263(22):3060-3062.

16. Booth JV, Grossman D, Moore J, et al. Substance abuse among physicians: a survey of academic anesthesiology programs. *Anesth Analg*. 2002; 95(4):1024-1030.

17. Collins GB, McAllister MS, Jensen M, Gooden TA. Chemical dependency treatment outcomes of residents in anesthesiology: results of a survey. *Anesth Analg*. 2005;101(5):1457-1462.

18. Wischmeyer PE, Johnson BR, Wilson JE, et al. A survey of propofol abuse in academic anesthesia programs. *Anesth Analg*. 2007;105(4):1066-1071.

19. Bryson EO, Silverstein JH. Addiction and substance abuse in anesthesiology. *Anesthesiology*. 2008;109(5):905-917.

20. Berge KH, Seppala MD, Lanier WL. The anesthesiology community's approach to opioid- and anesthetic-abusing personnel: time to change course. *Anesthesiology*. 2008;109(5):762-764.

21. Cohen PJ. Vigilance and the drug-dependent anesthesiologist [letter]. *Anesthesiology*. 2009;110(6):1422.

22. Skipper GE, DuPont RL. Anesthesiologists returning to work after substance abuse treatment [letter]. *Anesthesiology*. 2009;110(6):1422-1423.

23. Earley PH, Berry AJ. Reentry after addiction treatment: research or retrain [letter]. *Anesthesiology*. 2009;110(6):1423-1424.

24. Katz JD. Throw out the bathwater; keep the baby [letter]. *Anesthesiology*. 2009;110(6):1424-1425.

25. Torri A. The quality of care by opioid- and anesthetic-abusing personnel [letter]. *Anesthesiology*. 2009;110(6):1425.

26. Specht TC. One strike, you're out: one size fits none [letter]. *Anesthesiology*. 2009;110(6):1425-1426.

27. Berge KH, Seppala MD, Lanier WL. In reply [letter reply]. *Anesthesiology*. 2009;110(6):1426-1428.

28. Domino KB, Hornbein TF, Polissar NL, et al. Risk factors for relapse in health care professionals with substance use disorders. *JAMA*. 2005;293(12): 1453-1460.

29. McLellan AT, Skipper GS, Campbell M, Dupont RL. Five year outcomes in a cohort study of physicians treated for substance use disorders in the United States. *BMJ*. 2008;337:a2038. doi:10.1136/bmj.a2038.

30. Angres DH, Talbott GD, Bettinardi-Angres K. *Healing the Healer: The Addicted Physician*. Madison, CT: Psychological Press; 1998:75-90.

31. Fitzsimons MG, Baker KH, Lowenstein E, et al. Random drug testing to reduce the incidence of addiction in anesthesia residents: pulmonary results from one program. *Anesth Analg*. 2008;107(2):630-635.

32. Sivarajan M, Posner KL, Caplan RA, et al. Substance abuse among anesthesiologists [letter]. *Anesthesiology*. 1994;80(3):704.